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ABSTRACT

This training unit on fire hose, nozzles, and appliances is part of a 17-unit course package written to aid instructors in the development, teaching, and evaluation of fire fighters in the Wisconsin Fire Service Certification Series. The purpose stated for the 18-hour unit is to present accepted hose practices that meet federal standards and can be adapted to meet the needs of most fire departments. An instructor's guide sheet provides this information: introduction to the topic, instructor preparation, length of unit, methods of instruction, testing, equipment and facilities required, recommended visual aids, and references. Following a list of unit objectives, a lesson plan outlines the main teaching points and states the preferred teaching method, cites the reference and page number(s) where the information is to be found, and indicates the necessary handouts. Other contents in the unit include a unit quiz, answer key to the quiz, and handouts (graphs, student worksheets, informational material, and forms). (YLB)

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FIRE SERVICE CERTIFICATION SERIES

UNIT FSCS-FF-8-80

FIRE HOSE, NOZZLES AND APPLIANCES

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FIRE HOSE, NOZZLES AND APPLIANCES

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INTRODUCTION

During the early colonial days of our country, the process of conveying water to a fire and applying it for fire extinguishment was a major problem. Although a crude type of hose was developed in the seventeenth century, satisfactory fire hose was not produced and used until the nineteenth century. The only means by which these early settlers could transport water to a fire was by passing buckets of water down a line of organized firefighters. This system of moving water was known as "the Bucket Brigade" and these brigades were often governed by laws under the direction of Fire Masters. As settlements grew, villages and small cities were formed and a more effective means of applying water became necessary.

An important advancement in fire fighting equipment was made when the hand-powered pump came into use. Flexible hose for this pump was made by sewing together the edges of a strip of leather. Leather hose was later fastened together with brass or copper rivets. The next step in fire hose improvement was the use of canvas tubes (woven from flax), which had the merit of lightness but were subject to decay. This type of hose was used until the introduction of rubber. A woven jacket kined with rubber was the principal improvement in fire hose, and since that time many improvements have been made in the quality of materials used in the jacket and lining.

The purpose of this unit is to present accepted hose practices that meet the NFPA 1000 Standards and can be adapted to meet the needs of most fire departments.

INSTRUCTOR PREPARATION

Carefully study the objectives to determine the goals that have been set for the firefighters upon completion of this unit.

Review the lesson plans and if necessary, consult the references listed.

Develop suitable audio-visual aids, provide training area and necessary tools and equipment to effectively teach this unit.

LENGTH OF UNIT

Classroom Work	4 1/2 hours
Demonstration and Practice	12 hours
Evaluation and Testing	1 1/2 hours

METHODS OF INSTRUCTION

Lecture-Illustration
Lecture and Discussion
Lecture-Demonstration

Suggested methods and techniques are listed under Instructor's Notes on the lesson plans. For further information consult Fire Service Instructor Training, IFSTA #303, 3rd ed., pp. 71-83

For the demonstration and practice portion of this unit, it is recommended that the ration between trainees and instructional staff be one instructor or assistant for each fifteen (15) firefighters.

TESTING

At the end of this unit, a written quiz of five or more questions will be given in addition to the practical performance tests.

EQUIPMENT AND FACILITIES REQUIRED

Classroom with necessary audio-visual equipment
Indoor or outside area large enough to practice skills, having a fire hydrant and being relatively free of obstructions or traffic patterns

Pumper with hose compartment meeting NFPA Standards
Several hundred feet of various sizes of hose
6 rope hose tools or spanner belts
Extension ladders
Nozzles and appliances
Hose hoist
Rope
Spanners and hydrant wrenches
Samples of hose and couplings when available
Hose record cards

Recommended Visual Aids for this Unit

Hose layout Practices
Hose Fittings and Appliances
Robert J. Brady Company, Washington, D.C.

REFERENCES:

1. Hudiburg, E. and Thomas, C., Ed., Fire Hose Practices, 6th ed., #103 IFSTA, Stillwater, 1974, pp. 1-44, 57-78, 88-103, 125-150, 159-247, 249-251, 253

2. Hudiburg, E and McCoy, C., Ed., Forcible Entry, Rope and Portable Extinguisher Practices, 5th ed., #101, IFSTA Stillwater, 1972, pp. 116-117

3. Hudiburg, E. and McCoy, C., Ed., Fire Service Practices for Volunteer Fire Departments, 5th ed., #201, IFSTA, Stillwater, 1971, pp. 73-100

4. Peige, J., Ed., Essentials of Fire Fighting, 1st ed., #200, IFSTA, Stillwater, 1977, pp. 99-159

OBJECTIVES

All objectives in this unit are to be met according to the material contained in the International Fire Service Training Association Manuals #103 Fire Hose Practices and #200 Essentials of Fire Fighting.

To satisfactorily complete this unit, the firefighter must attain a grade of 70 or higher on the written quiz and successfully complete the practical skills examination.

NFPA STANDARD 1001

FIRE HOSE-NOZZLES-APPLIANCES

FIRE FIGHTER I

3-7 Fire Hose, Nozzles and Appliances

3-7.1 The fire fighter, given an approved fire department pumper, shall identify the sizes, types, amounts and use of hose carried on that pumper.

3-7.2 The fire fighter, given an approved fire department pumper, shall identify the use of hose adaptors, and hose appliances carried on that pumper.

3-7.3 The fire fighter, given the necessary equipment and operating as an individual and as a member of a team, shall advance dry hose lines of two different sizes, both of which shall be 1½ inch or larger, from a pumper:

A. Into a structure
B. Up a ladder into an upper floor window
C. Up an inside stairway to an upper floor
D. Up an outside stairway to an upper floor
E. Down an inside stairway to a lower floor
F. Down an outside stairway to a lower floor
G. To an upper floor by hoisting

3-7.4 The fire fighter, given the necessary equipment and operating as an individual and as a member of a team, shall advance charged attack lines of two different sizes, both of which shall be 1½ inch or larger, from a pumper:

A. Into a structure
B. Up a ladder into an upper floor window
C. Up an inside stairway to an upper floor
D. Up an outside stairway to an upper floor
E. Down an inside stairway to a lower floor
F. Down an outside stairway to a lower floor
G. To an upper floor by hoisting

OBJECTIVES

FIRE FIGHTER I

3-7.5 The fire fighter shall demonstrate cleaning fire hose, couplings and nozzles, and inspecting for damage.

3-7.6 The fire fighter shall demonstrate the connection of fire hose to a hydrant and the operation of fully opening and closing the hydrant.

3-7.7 The fire fighter shall demonstrate the loading of fire hose on fire apparatus as prescribed by the authority having jurisdiction, and shall also identify the purpose of at least three types of hose loads and finishes.

3-7.8 The fire fighter shall demonstrate at least three hose rolls as specified by the authority having jurisdiction.

3-7.9 The fire fighter shall demonstrate at least two hose carries as specified by the authority having jurisdiction.

3-7.10 The fire fighter shall demonstrate at least two hose drags as specified by the authority having jurisdiction.

3-7.11 The fire fighter shall demonstrate at least two methods of coupling and uncoupling fire hose as specified by the authority having jurisdiction.

3-7.12 The fire fighter, given the necessary equipment and operating as an individual and as a member of a team, shall demonstrate the method of working from a ladder with cahrged attack lines of two different sizes, both of which shall be 1½ inch or larger from a pumper.

3-7.13 The fire fighter shall demonstrate the methods of carrying hose into a building to be connected to a standpipe, and the methods of advancing a hose line from a standpipe, as specified by the authority having jurisdiction.

3-7.14 The fire fighter shall demonstrate the methods for extending a hose line and relacing a burst section as specified by the authority having jurisdiction.

FIRE FIGHTER II

4-7.1 The fire fighter, given an approved fire department pumper, shall identify, select, and demonstrate the use of any nozzle carried on the pumper.

4-7.2 The fire fighter, given the necessary equipment, shall demonstrate all hand hose lays specified by the authority having jurisdiction.

4-7.3 The fire fighter shall demonstrate inspection and maintenance of fire hose, couplings and nozzles; and recommend replacement or repair as needed.

4-7.4 The fire fighter shall demonstrate all hydrant/pumper connections as required by the authority having jurisdiction.

COURSE: FIRE SERVICE CERTIFICATION SERIES

LESSON: FIRE HOSE, NOZZLES AND APPLIANCES

EQUIPMENT NEEDED: FIRE HOSE, NOZZLES, APPLIANCES AND TOOLS, APPARATUS AND LADDERS

TRAINING AIDS: AUDIO-VISUAL EQUIPMENT, SLIDES, TRANSPARENCIES AND TEXTS

INSTRUCTORS NOTES	TEACHING POINTS
Refer to Instructor's Guide sheet for detailed list of equipment, texts and suggested visual aids.	Fire hose is used for: Fire Attack Supplying Drafting or intake Relaying
	Construction, Care and Testing.
Ref. IFSTA #103 Fire Hose pp. 7-15	1. Fire hose measurements.
Use samples of entire lengths of hose to illustrate	a. 3/4 or 1 inch rubber-covered, rubber-lined hose, equipped with 1-inch couplings, is commonly called booster or chemical hose. b. 1-inch woven jacketed rubber-lined hose, equipped with 1-inch couplings, sometimes used on booster pumps. c. 1 1/8-inch woven jacket rubber-lined single jacket hose with 1 1/8-inch couplings commonly called forestry hose. d. 1 1/2-inch woven jacketed rubber-lined hose with 1 1/2-inch couplings, single or double jacket, attack lines. e. 2 1/2-inch woven jacketed rubber-lined hose, single, double or triple jacket, equipped with 2 1/2-inch couplings. Attack, Supply, Relay f. 2-inch woven jacketed rubber-lined hose, single or double jacket, equipped with 2 1/2-inch couplings. g. 3-inch woven jacketed rubber-line hose, single, double or triple jacket, equipped with 2 1/2-inch reducing couplings or 3-inch couplings. Supply, Relay h. 3 1/2-inch woven jacketed rubber-lined hose, single, double or triple jacket, equipped with 2 1/2-inch or 3-inch reducing couplings or 3 1/2-inch couplings. Supply, Relay, Intake.

INSTRUCTORS NOTES	TEACHING POINTS
	Construction, Care and Testing cont.
	i. 4, 5, and 6-inch woven jacketed rubber-lined intake or supply hose. (Soft suction sleeves)
	j. The 2 1/2, 3, 4, 4 1/2, 5, and 6-inch noncollapsible intake or hard suction sleeves.
	2. The rubber tube.
	a. extruded.
	b. calendared or lapped.
	c. attachment to jacket.
	d. round or flat cure.
	3. The outer jacket.
	a. braided.
Ref. IFSTA #103 Fire Hose pp. 7-15	b. wrapped.
	c. woven.
	(1) warp - lengthwise
	(2) filler cords - around
	d. jacket materials
	(1) cotton.
	(2) synthetics
	(3) rubber
	(4) plastic

INSTRUCTORS NOTES	TEACHING POINTS
Ref. IFSTA #103, Fire Hose, pp. 15-22 Firefighters should gain experience during this part of course by maintaining hose used in training. 3-7.5 4-7.3	4. Care of Fire Hose. a. mechanical injuries. b. heat damage. c. mildew and mold. d. chemical contacts. e. washing, drying and storage procedures.
Ref. IFSTA #103, Fire Hose pp. 22-28	5. Testing Fire Hose. a. tested upon delivery. b. anually. c. damaged or repaired hose. d. test procedures. e. records of tests and inspections.
Ref. IFSTA #103 Fire Hose pp. 29-44	Fire Hose Couplings. A. Types of Couplings. 1. Materials used. a. brass. b. aluminum alloys with or without hard coatings. c. magnesium alloys. 2. Construction techniques. a. cast - weakest. b. extruded. c. drop-forged - strongest. 3. Coupling parts. a. shanks. b. reducers.

INSTRUCTORS NOTES	TEACHING POINTS
	c. swivels.
	d. swivel protectors.
	e. lugs.
	f. threads.
	g. higbee cuts and indicators.
	h. expansion ring and gasket.
	4. Attaching couplings to hose.
	a. expansion ring.
	b. screw type (Bar-Way)
4-7.3	5. Coupling injury and care.
3-7.2	<u>Hose Appliances and Tools</u>
4-7.1	Fire Hose Nozzles.
	A. Are divided into seven specific groups.
	1. Hand line solid stream nozzles.
	2. Adjustable pattern fog stream nozzles.
	3. High pressure fog stream nozzles.
	4. Fixed pattern fog stream nozzles.
	5. Master solid stream nozzles.
	6. Master fog stream nozzles.
	7. Special purpose nozzles.
	a. Distributor cellar nozzles. b. Puncture nozzles. c. Water curtain nozzles.

INSTRUCTORS NOTES	TEACHING POINTS
Ref. IFSTA #103 Fire Hose pp. 45-55	Wye Hose Appliance A. Used for dividing one hose line into two or more hose lines 1. 2 1/2-inch to 1 1/2-inch, usually gated, for direct connection to 2 1/2-inch hose lines. 2. 1 1/2-inch wye used for the extension of 1 1/2-inch hose lines from a 2 1/2-inch shut-off nozzles that has a 1 1/2-inch leader line tip. 3. 2 1/2-inch wye used to divide one 2 1/2-inch hose line into two 2 1/2-inch hose lines.
Use actual appliances, when available, to illustrate their operation.	Siamese Hose Appliance A. Often confused with the wye because of the similiarity in appearance. 1. Siamese range in size from 2 1/2-inch to 4 1/2-inch or larger. 2. The larger sizes are used for supplying pumpers and master stream devices. TO AID IN THEIR IDENTIFICATION REMEMBER THAT: THE WYE has ONE female and TWO male connections. THE SIAMESE has ONE male and from TWO to FOUR female connections, usually clappered. Water Thief Hose Appliance A. Variation of wye adapter and equipped with ONE female connection and THREE male connections. Used to provide either 2 1/2-inch or 1 1/2-inch hose lines from the same layout. Special Hose Appliances Double male adapter Double Female adapter Reducers 1 1/2-inch to 1-inch 2 1/2-inch to 1 1/2-inch 4 to 6-inch intake couplings to 2 1/2-inch Pump intake hose elbows

INSTRUCTORS NOTES	TEACHING POINTS
Demonstrate the use of this device. Have class practice	Hose Hoist Tool. Used to hoist hose lines and equipment above ground level reducing the possibility of damage to hose lines and ropes.
Ref. IFSTA #103 Fire Hose pp. 45-55	Hose Jacket Tool Used to seal small cuts or breaks that might occur in fire hose and to connect mismated or damaged couplings of the same size.
Demonstrate SAFE and proper operation. Have class practice.	Hose Clamp Tool. Used to shut off water in hose lines when other control valves are not applicable. Types. Hydraulic press. Screw down. Vise. Pull up. Press down.
	Hose Spanners and Hydrant Wrenches Hose spanner for tightening couplings but can also be used for shutting off utility cocks, prying and hammering. Hydrant wrenches for control of hydrant operation, may be equipped with spanner.
	Fire Hose Control Enables one person to operate and control a 2 1/2-inch line more easily and safely.
	Fire Hose Ramps or Bridges. Used to protect hose lines from damaged when crossed by vehicl Chafing Blocks are devices that are made to clamp around fire hose where the hose is subject to wear from vibration.
	Rope, Strap, Chain Hose Tools and Spanner Belts Some of their uses are carrying, securing, dragging and assisting in hose line operation in connection with ladders, fire escapes, stairways, and hoisting.

INSTRUCTORS NOTES	TEACHING POINTS
Demonstration and Practice for procedures see IFSTA #103 Fire Hose, 6th ed. pp. 88-103	Hose Connections.
1. pp. 88 3-7.11	A. Coupling hose (one person)
	1. Across the leg.
2. pp. 89	2. Fold over.
3. p. 90	3. Coupling tilt.
4. p. 91	4. Between both feet.
B. p. 92	B. Coupling hose (two persons)
	C. Breaking a tight coupling.
1. p. 93	1. Knee press - one person.
2. p. 94	2. Stiff arm - two persons.
	D. Attaching a nozzle to hose.
1. p. 95	1. Method 1.
2. p. 96	2. Method 2.
3-7.6	E. Making hydrant connections.
1. p. 97	1. Opening and closing hydrants.
2. pp. 97-103	2. Catching a hydrant.
a. show each finish and unloading procedure.	a. hose load finish - donut, rip-rap or accordion.
b. show three methods illustrated.	b. "wrapping" the hydrant.

INSTRUCTORS NOTES	TEACHING POINTS
Demonstration and Practice use methods illustrated on pp. 59-78 of IFSTA #103 Fire Hose, 6th ed. 3-7.8	Hose Rolls. A. Straight roll. 1. For storage. B. Donut roll. 1. For fireground use. 2. One person method (Two shown) 3. Two person method. C. Twin donut roll. 1. Special service. D. Self-locking roll. 1. Special service.
Demonstration and Practice use methods illustrated on pp. 164-247 of IFSTA #103 Fire Hose 6th ed. 3-7.1	Loads and Layouts. A. Terminology. 1. Hose compartments - hose beds. 2. capacity. 3. construction. 4. Forward lay. 5. Reverse lay. 6. Dutchman. a. changes direction of the hose. b. changes location of coupling.

INSTRUCTORS NOTES	TEACHING POINTS
	B. General Loading Factors.
	1. Check gaskets and swivel.
Ref. IFSTA #103 Fire Hose pp. 164-247	2. Keep flat sides in same plane (lug position not important)
	3. Hand-tighten couplings (don't use wrenches)
	4. Wrinkles should be moved from inside of bends
	5. Use "Dutchmen" where necessary.
3-7.7	C. Making Hose Loads
1. Demonstrate as illustrated on pp. 166-169 of IFSTA #103 6th ed.	1. Accordian Load
	a. Place bends at each end of hose bed.
	b. all flakes the same length.
	c. has advantages for hose line advancement.
2. pp. 175-176	2. Flat Load
	a. hose on its flat side.
	b. same number of bends as in accordian load.
	c. all flakes the same length.
3. pp. 178-181	3. Horseshoe Load
	a. fewer bends than accordian or flat loads.
	b. flakes longer and unequal in length.
	D. Modified Basic Loads
1. p. 186	1. Loading for single or dual layout.
	a. may use any of three basic loads.
	b. bed must be divided.

INSTRUCTORS NOTES	TEACHING POINTS
2. pp. 187-190	2. Loading large diameter hose. a. larger than 2 1/2-inch. b. use of a "SKID". c. Use flat load for 3 1/2-inch or larger hose.
	E. Hose Load Finishes
1. pp. 191-195	1. Skid load finish (2 1/2-inch reverse lay) unloading and advancing.
2. pp. 198-202	2. Skid load finish (1 1/2-inch reverse lay) unloading and advancing.
3. pp. 205-210	3. Cisco load finish (1 1/2-inch reverse lay) unloading and advancing.
4. pp. 211-216	4. Reverse horseshoe load finish (1 1/2-inch reverse lay) unloading and advancing.
	F. Separate Compartment Hose Loads
1. pp. 217-230	1. Pre-connected reverse horseshoe load (1 1/2-inch) loading, unloading and advancing.
2. pp. 230-234	2. Pre-connected flat load (1 1/2-inch) loading, unloading and advancing.
3. pp. 235-241	3. Pre-connected triple layer load (1 1/2-inch) loading, unloading and advancing.
4. pp. 240-247	4. Combination load (1 1/2-inch) loading, unloading and advancing.
	Fire Hose Carries, Advances and Drags
A. #103 IFSTA Fire Hose p. 125 3-7.9 3-7.10	A. Carrying the nozzle end (dry line). 1. Hose and nozzle on opposite sides. 2. Hose and nozzle on same side. 3. Advantages. a. leaves both hands free for climbing ladders and opening doors.

INSTRUCTORS NOTES	TEACHING POINTS
	b. safety for carrier and protection for nozzle.
Ref. IFSTA #103, Fire Hose pp. 133-136.	B. Single section drain and carry.
	1. Purpose.
	C. Shoulder fold carry.
1. pp. 171-174	1. Useful for the advancement of hose line especially from accordian loads.
	2. Useful for advancement up stairways.
3. pp. 182-185	3. For shoulder carrying from horseshoe load, adjustment of flakes is necessary.
D. pp. 139-140	D. Underarm carry
	1. Useful for carrying pre-arranged short folded flakes, such as, skid load finishes.
2. p. 139	2. Single section carry.
3. pp. 203-204	3. Segment of a working line.
E. pp. 141-147	E. Shoulder loop carry.
	1. Single section or nozzle end.
	2. Segment of a working line.
3. p. 177	3. Lends itself to advancing flat loads.
F. p. 148	F. Working line drag
G. p. 150-152	G. Street drag (single section)
	1. both of the above drags for moving hose lines at ground level relatively free from obstructions.
	2. Of limited use on stairways.
H. pp. 250-251	H. Advancing hose up a stairway.
Have firefighters in class estimate the line needed.	1. Shoulder fold carry.
	2. Underarm carry.
	I. Advancing hose up ladders.

INSTRUCTORS NOTES	TEACHING POINTS
Ref. IFSTA #103 Fire Hose pp. 250-251	1. On common shoulder. 2. Using rope hose tools or spanner belts. 3. Securing hose to ladder.
pp. 253	J. Hoisting Hose
pp. 252	K. Passing Hose Upwards.
Also see IFSTA #101 Forcible Entry, Rope and Portable Extinguisher Practices pp. 116-117	
	Advancing Charged Line Up Ladder
	1. Position firefighters within reaching distance of each other.
Ref. IFSTA #200 Essentials of Fire Fighting, 1st ed. p. 158	2. Hose is pulled or pushed from person to person.
	3. Require use of leg lock on ladder.
	4. Firefighter with nozzle enters structure with remaining personnel hoisting additional hose as necessary.
p. 158 3-7.12	Using Charged Line From Ladder
	1. Follow procedure for advancing charged line.
	2. Firefighter with nozzle waits until some slack is provided and then projects nozzle thru desired rungs of ladder securing it with a rope hose tool or spanner belt.
p. 154-155 3-7.13	Standpipe Operations
See also IFSTA #103 Fire Hose pp. 85-87	A. Advancing hose line from standpipe.
	1. Take standpipe pack to the floor below the fire.
	2. Detach house line, attach necessary adapters, connect FD hose to standpipe, attach nozzle and advance up stairway to fire floor.

INSTRUCTORS NOTES	TEACHING POINTS
	Special Fire Hose Operations
Demonstration and Practice using methods shown in IFSTA #103 Fire Hose pp. 153-154	A. Picking up slack in hose lines.
pp. 155-156	B. Retrieving a charged wild line.
p. 157 3-7.14	C. Replacing a section of hose.
p. 158	D. One person operation of a large fire stream.
	**Identification, selection and operation of nozzles carried on an approved fire department pumper.
A. pp. 45-46	A. Seven specific groups.
Also see IFSTA #200 Essentials of Fire Fighting 1st Ed. pp. 165-174	
IFSTA #103, Fire Hose	**Hand Hose Lays
A. pp. 170-173 4-7.2	A. Unloading and advancing for reverse layout.
B. p. 174	B. Unloading and advancing for forward layout.
	**Inspection and maintenance of fire hose, couplings and nozzles.
IFSTA #103 Fire Hose pp. 14-22 pp. 42-44	
IFSTA #200 Essentials of Fire Fighting 1st Ed. p. 174	
Demonstration and Practice using methods shown in IFSTA #103 Fire Hose	**Hydrant/Pumper Connections.
p. 104 4-7.4	A. Soft intake hose.
	1. Position apparatus at a convenient angle to hydrant within the limits of the length of intake hose.
p. 105	2. Remove soft intake hose, hydrant wrench and adapter from pumper.
	a. place wrench on hydrant operating nut with handle pointed away from outlet.
	b. Unroll intake hose from hydrant to pump intake.

INSTRUCTORS NOTES	TEACHING POINTS
p. 106	3. Remove hydrant cap, connect intake hose to hydrant and pump intake using any adapters necessary.
p. 107	4. Open hydrant slowly and tighten any leaking connections.
	B. Noncollapsible intake hose.
p. 110	1. Driver position apparatus, checks to see booster tank valve is closed, and removes intake cap. 2nd firefighter secures hydrant wrench and adapter from apparatus, removes hydrant cap and places hydrant wrench on operating nut of hydrant with handle pointing away from outlet.
p. 111	2. Both firefighters remove noncollapsible intake hose and place it on the ground with the male coupling toward the hydrant.
p. 112 Note: the intake hose may be carried with adapter attached.	3. Driver elevates the male end of the intake hose while the other firefighter connects the non-swivel end of the adapter to the male coupling.
p. 113	4. Both firefighters align the adapter swivel with hydrant outlet and the firefighter at the hydrant makes the connection.
P. 114	5. Both firefighters pick up the female end of the hose and make the necessary curves to direct the end towards the pump intake. One firefighter leans against or pulls on the hose to help align the coupling and the intake. The other firefighter makes the connection.
p. 115	6. Open the hydrant slowly, tighten any leaking connections and set pump controls.

UNIT QUIZ

1. List three uses for fire hose.

a _____

b _____

c _____

2. List four general categories of fire hose injury.

a _____

b _____

c _____

d _____

3. List the three procedures necessary to place a section of hose back in service.

a _____

b _____

c _____

4. List three types of nozzles.

a _____

b _____

c _____

5. The wye hose appliance has _____ female and _____ male connections.

6. Which of the following is the recommended pressure for testing fire hose.

(Please circle the correct answer)

a. 400 p.s.i.

b. 600 p.s.i.

c. 200 p.s.i.

d. 250 p.s.i.

7. Which of the following is the recommended maximum amount of fire hose to be tested in each line.

   (Please circle the correct answer)

   a. 100 feet

   b. 300 feet

   c. 200 feet

   d. 1000 feet

8. List two methods of attaching couplings to a section of hose.

   a. _____

   b. _____

9. List three common injuries to fire hose couplings.

   a. _____

   b. _____

   c. _____

10. The Higbee Indicator is used to _____

    _____

11. A skid load finish is unloaded at the scene of a fire and the pumper proceeds to the hydrant or water source. This is an example of which of the following.

    (Please circle the correct answer)

    a. Combination lay

    b. Forward lay

    c. Reverse lay

    d. Direct lay

12. List two purposes of the "Dutchman"

    a. _____

    b. _____

13. List two methods for preventing MILDEW on hose.

    a. _____

    _____

    b. _____

    _____

14. List two hose carries to be used when advancing hose line up stairways.

    a. _____

    b. _____

15. A hose roll with both couplings on the outside is called a _____ roll.

16. List one method of breaking a tight coupling.

    a. _____

17. List two types of hose layouts.

    a. _____

    b. _____

18. The three types of fog stream nozzles are the _____

    and the _____ pattern and the _____ pattern.

19. The Hose Jacket Tool is used to _____

    _____ and _____

    _____ couplings of the same size

20. List two types of hose drags.

    a. _____

    b. _____

ANSWER KEY

1. a. Relaying
   b. Drafting or intake
   c. Supplying
   d. Fire attack
2. a. Mechanical
   b. Heat
   c. Mildew and mold
   d. Chemical contact
3. a. washing
   b. drying
   c. storing
4. a. Hand line solid stream nozzles
   b. Adjustable pattern fog stream nozzles
   c. High pressure fog stream nozzles
   d. Fixed pattern fog stream nozzles
   e. Master solid stream nozzles
   f. Master fog stream nozzles
   g. Special purpose nozzles
5. One female
   Two male
6. 250 p.s.i.
7. 300 feet

ANSWER KEY

8. Expansion ring

   Screw type (Bar-Way)

9. Crushing
   Dragging
   Dropping

10. Indicates the Higbee Cut or start of hose threads

11. Reverse lay

12. Change direction of hose
    Change location of coupling

13. Remove wet hose and replace with dry hose.
    Remove, inspect, sweep and reload every 30 days

14. Shoulder carry
    Underarm carry

15. Donut roll

16. Knee press
    Stiff arm

17. Forward and reverse

18. High pressure fog stream nozzles
    Adjustable pattern fog stream nozzle
    Fixed pattern fog stream nozzle

19. Seal small cuts and breaks and connect mismatched couplings

20. Street drag
    Working line drag